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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,547	04/09/2004	Steffan Diedrichsen	04860.P3290	1302
45217 7590 11/16/2009 APPLE INC./BSTZ BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP 1279 OAKMEAD PARKWAY SUNNYVALE, CA 94085-4040				
EXAMINER PHAN, HAI				
ART UNIT 2614		PAPER NUMBER		
MAIL DATE 11/16/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/821,547

**Applicant(s)**

DIEDRICHSEN, STEFFAN

**Examiner**

HAI PHAN

**Art Unit**

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CS-100)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### **DETAILED ACTION**

1. This Office Action is in response to the Applicants' communication filed on 04/09/2004. In virtue of this communication, claims 1-26 are currently pending in the instant application.

#### ***Drawings***

2. The drawings submitted on 04/09/2004 have been reviewed by the examiner; however, Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated as explained by the Applicant (see paragraphs 0002 and 0009 of the disclosure). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 18, 20-21, 23-24 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Carlbom et al (U.S. Patent 6,751,322, hereinafter referred to as Carlbom).

Regarding claims 1, 18, 21 Carlbom discloses a system and the corresponding method for convolving the audio signal with the multi-channel impulse responses (Fig. 15, col. 11, lines 43-61) comprising the convolution engine (element 19) and impulse response synthesizer (impulse response element that outputs  $kx1$ ).

Regarding claim 24, Carlbom further teaches that his invention can be implemented by the computer system (col. 12, lines 30-33).

Regarding claims 20, 23, and 26, Carlbom further shows the convolution is performed on the audio signal (col. 11, lines 43-46).

5. Claims 1-2, 18, 21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Sloan (U.S. Patent 4,989,158).

Regarding claims 1, 18, and 21, Sloan discloses a device (Fig. 6) comprising the impulse-response synthesizer (element 40 and 42) and the convolution engine (elements 72 and 74).

Regarding claim 2, Sloan further teaches the impulse-synthesizer comprises a noise synthesizer (element 40) and control means (the shift register 42) which shifts the noise generated by generator 40, thus interpreting as controlling the one or more parameters of the noise synthesizer.

Regarding claim 24, Sloan further teaches the method of synthesizing noise and performing convolution are implemented by a programmable computer (see col. 15, lines 26-28).

6. Claims 1, 18, 20-21 and 23 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's admitted prior art.

Regarding claims 1, 18, 20-21, and 23, Applicant admitted in the current disclosure that the system and method for generating artificial reverberation as recited in these claims (see Fig. 1 and specification, para 0002, lines 6-13 and para 0008).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 19, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sloan (U.S. Patent 4,989,158) in view of Amano et al (U.S. Patent 7,130,799).

Regarding claims 19, 22, and 25, Sloan discloses a device (Fig. 6) comprising the impulse-response synthesizer (element 40 and 42) and the convolution engine (elements 72 and 74). Sloan further teaches the method of synthesizing noise and performing convolution are implemented by a programmable computer (see col. 15,

lines 26-28). Sloan also discloses that the noise generator is the pseudo random noise generator (element 40). Sloan fails to teach the means for filtering noise from the noise generator and means for generating signal envelope from the filtered noise. However, Amano discloses a speech synthesis device and method thereof (see Fig. 1) including the filter (24) and amplitude adjuster (25) connected sequentially to the output of the noise generator. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the filter and the amplitude adjuster as taught by Amano into the system of Sloan so that natural sounding synthesized speeches can be generated (col. 1, lines 65-67).

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 2-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, line 3-4, the term “the generated reverberation” is not clear as to what it really refers to because the synthesizer only supplies the impulse-response information as recited in the independent claim 1.

Regarding claim 6, it is not clear if "means for randomly varying a time interval" is part of the density generator or a separate element that is part of the noise synthesizer but outside of the density generator.

Regarding claim 8, it is not clear if "a pair of pseudo-random number generators" is part of the noise generator in addition to the "pseudo-random number generator" as already recited in claim 7.

Regarding claim 9, it is not clear if the "separate density generator" is part of the density generator defined in claim 2, or another further element.

Regarding claim 10, it is not clear if the "mixing arrangement" is part of the noise generator, and it is unclear what "the pair of first multipliers". Perhaps when the language of claim 8 is fixed, this would become clear.

Regarding claim 13, it is recommended that the word "further" be added before "comprises" in line 1 to clearly define that the mixing arrangement now further includes a summing means.

Regarding claim 16, it is not clear how the decorrelation means is connected to other elements.

### ***Claim Rejections - 35 USC § 101***

11. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

12. Claims 24-26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claims 24-26, these claims recite “a machine readable medium providing executable program instructions, which when executed by a processing system, perform a method for generating artificial reverberation”. Even though the claims recite the machine readable medium, the specification does not specifically state that the machine readable medium is of a particular apparatus. In the specification, page 11, para 0033, lines 2-4, Applicant stated that the machine readable medium is a software. Thus, the claimed machine readable medium is actually a software which is not a patentable subject matter.

#### ***Allowable Subject Matter***

13. There is no art rejection for claims 3-17 because none of the prior art teaches the artificial reverberation generating device having the convolution between the impulse response synthesizer and the convolution engine where the impulse response synthesizer comprises a noise synthesizer having, for each of the two or more audio channels, the noise generator, the density generator, the phase correlation means and the filter and amplitude-envelope generator means and their connection as outlined in claim 3. These claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and to correct the indefiniteness as raised in the 35 U.S.C. 112, second paragraph rejection above.



***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAI PHAN whose telephone number is (571)272-0486. The examiner can normally be reached on Monday-Friday (9:00AM-5:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 571-272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HAI PHAN/  
Examiner, Art Unit 2614

/CURTIS KUNTZ/  
Supervisory Patent Examiner, Art  
Unit 2614